

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
22 August 2002 (22.08.2002)

PCT

(10) International Publication Number
WO 02/065404 A2

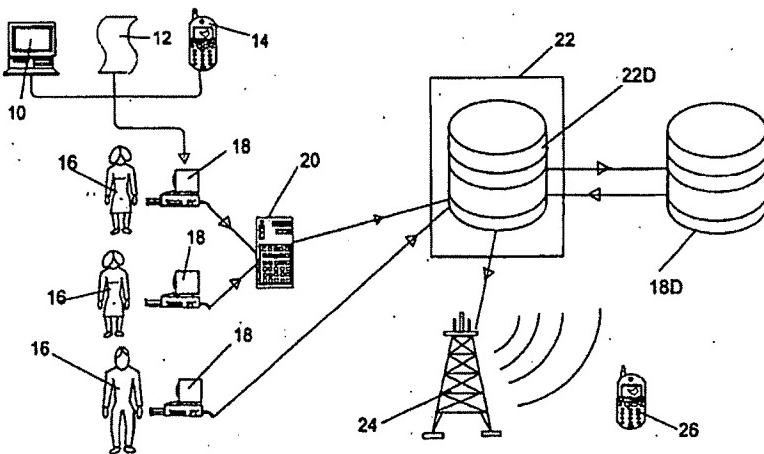
- (51) International Patent Classification⁷: G07C 9/00
- (21) International Application Number: PCT/GB02/00580
- (22) International Filing Date: 12 February 2002 (12.02.2002)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
0103452.9 13 February 2001 (13.02.2001) GB
- (71) Applicant and
(72) Inventor: WILLIAMS, Stuart [GB/GB]; Oakhurst, Chequers Lane, Eversley Cross, Hook, Hampshire RG27 0NT (GB).
- (74) Agent: PARABOLA; 1 Richfield Place, Richfield Avenue, Reading RG1 8EQ (GB).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: IDENTIFICATION SYSTEM



WO 02/065404 A2

(57) Abstract: A swipe card reader (38) is substituted by a short range transmission from a cellular telephone (26) at, for example, a point of sale terminal (18). The short range transmission, being optical, sonic, low energy radio, inductive or capacitive, is at the rate of a card swipe, or can be reduced to the rate of a card swipe, and contains data identical to the data that would be derived from a card swipe, so that magnetic cards, the card swipe software and the card swipe reader (38) can still be used. The mobile telephone (26) automatically receives its message transmission as an individually directed long range transmission from a service centre (22), and stores the message for future use. A provider (16) can replace the stored message either to give back lost access to a user or to bar a user. The invention is directed towards, but not limited to, providing access to customer loyalty schemes, and access to a building or other facilities.

-1-

Identification System

The present invention relates to identification of individuals. It particularly relates to identification achieved by automated reading of data from a token, presented by an individual. It most particularly relates to the manner of provision, and the use of, such data.

It is known for retailers and service providers to run a "loyalty card" scheme. In such schemes, customers are provided with an identification card, usually with a mechanically readable magnetic stripe. The retailer stores a customer profile, such as name, address, and any other details which are relevant, in a database, in association with the card number. Much of the customer details are also encoded in the magnetic stripe. Each time the customer does business with the loyalty card, the provider reads the loyalty card to identify the customer, and records the amount of the transaction onto the database. The customer is offered various rewards dependently upon the amount of business he has placed with the provider. A fractional refund of the total amount of money spent, discounts or special offers, are typical rewards.

Loyalty card schemes are nearly exclusive to large organisations. They require extensive computer facilities which small businesses can rarely afford. Setting up and maintaining such a facility can prove very costly. It is one object of the present invention to provide a customer identification system which is economically accessible even to small providers.

A customer cannot always take advantage of a loyalty card

-2-

scheme. There are so many different loyalty cards issued that it often proves impossible to carry them all. A particular provider's card may well not find room in a customers over full wallet. If the customer finds he does 5 not have an appropriate card, then he cannot take advantage of the card scheme. Another object of the present invention is to provide a system wherein a customer can access card dependent services despite not having the appropriate card. Yet another object of the 10 invention is to replace a plurality of cards with no cards, so that the customer no longer needs to carry a multitude of cards.

The present invention is also appropriate for other forms 15 of card controlled service provision. Access to buildings, car parks or other facilities, is often controlled by mechanically readable identity cards. Another object of the present invention is to provide means for card controlled access to a service without the physical need 20 for a card.

If a card is lost, all access to a facility or service is also lost until a replacement card is physically provided. This can take days or weeks. Another object of the present 25 invention is to provide means whereby lost means of access can be replaced within moments. It is another object of the invention that the replacement means of access is made available only to the rightful user.

30 Magnetic stripe cards are individual. A different code must be recorded for each user and a different embossed pattern is applied for each user. The cards must be transported or mailed to the user. This whole operation is costly. The present invention seeks to provide a solution

-3-

where the cost of production and delivery to a user of an effective card is reduced to the cost of a single telephone call.

5 Introduction of new solutions often conflicts with existing solutions. The changeover between the new and the old is often avoided because of the cost, disruption and duplication of equipment it can cause. It is another object of the present invention to provide improvement
10 over the prior art while being totally compatible with existing solutions. It is yet another object of the present invention to provide a system wherein any devices, hardware or software required, to implement the invention, is entirely additional to that in existing solutions and
15 maintains the integrity of existing solutions.

Mobile phones, pagers, PIA's and other devices which depend upon a mobile operator are a convenient way for an individual to make known an identity. However, the cost of
20 making a call is often more than the amount received in a loyalty scheme. The present invention seeks to exploit the useful functions of a mobile phone and similar devices while avoiding access through the mobile operator.

25 According to a first aspect, the present invention consists in a system comprising: a transceiver, operative to receive a long range data message directed exclusively to that particular transceiver, operative to store the data message, operative thereafter to retrieve the stored data message and operative to transmit the retrieved data message, over a short range; and a receiving unit, operative to receive the data message from said transceiver, operative to analyse the data message to determine its contents, and operative to grant access to a

-4-

facility if said contents are acceptable.

- According to another aspect, the present invention consists in a method for permitting access to a facility,
- 5 said method including the steps of: Sending a long range data message exclusively to a selected transceiver; storing the data message in said transceiver; thereafter retrieving the data message and transmitting the data message, over a short range, from said transceiver;
- 10 receiving the data message from said transceiver; recovering the contents of said data message, received from said transceiver; and granting access to said facility if said contents are acceptable.
- 15 According to another aspect, the invention consists in a transceiver for use in such a system or in such a method.
- According to another aspect, the invention consists in a receiving unit, for use in such a system or in such a
- 20 method.
- The invention allows that the transceiver can be a cellular telephone comprising a short range transmitter.
- 25 The invention also allows that the transceiver can be a pager comprising a short range transmitter.
- The invention allows that the long range message can originate with a service centre.
- 30 The invention further provides that the service can receive indication of the identity of the transceiver, can identify the user thereby, and can grant access to the facility in response there to.

-5-

The invention further provides that the service centre can receive identification of the identity of the transceiver from a point of sale terminal or by telephone and that the 5 service centre can send other information to said transceiver.

The invention further allows that the message is a swipe card message, and that said short range transmission is 10 serial data at a rate compatible with reading a swipe card in a swipe card reader.

The invention further provides that the facility is a facility capable of being accessed using a swipe card.

15 The invention provides that the facility can be a loyalty card scheme.

20 The invention is further explained, by way of example, by the following description, read in conjunction with the appended drawings, in which:

25 Figure 1 illustrates, schematically, the various process involved when a customer, in this example of a loyalty card scheme, registers with a system incorporating the present invention.

Figure 2 is an elevation of an electronic point of sale 30 terminal (EPOS) incorporating elements which allow the implementation of the present invention.

Figure 3 is a cellular telephone, modified to operate in accordance with the present invention.

-6-

Figure 4 illustrates, schematically, the various steps involved when a customer makes available his identity when making a transaction.

- 5 Figure 5 is a chart showing the various operations involved when a customer registers with a system, complying with the present invention, and otherwise illustrated in Figure 1
- 10 Figure 6 is flowchart of the activity of a modified cellular telephone when a customer makes available his identification data in the course of a transaction.

And

15

Figure 7 is a flowchart of the activity of the modified cellular telephone when it receives identification data.

- Attention is first drawn to Figure 1, a schematic
20 representation of the manner in which a user can register according to the present invention.

The example, chosen for the preferred embodiment of the invention, is that of a loyalty card scheme, where a
25 customer requires to present a loyalty card at each transaction with a particular retailer (the provider of the loyalty card scheme). The invention is not limited to such an application, and can be applied to any situation where a card with a magnetically readable stripe is
30 currently employed. These include building access, debit and credit card transactions, medical record cards, civil identity cards, automobile rescue services, car park access, equipment access, vehicle access, and so on.

-7-

In this example of the preferred embodiment, a customer may wish to join a loyalty scheme, or a retailer may simply wish to provide the customer with access to his loyalty scheme. The request for joining the loyalty scheme, and the supporting customer profile data, may come through the internet 10, may be derived from written data on forms 12 which the customer has completed, may come as a verbal request via the telephone 14, or can come by any other means whereby such a request can be made and supporting data acquired. The request may be for the addition of a new customer and profile to the loyalty scheme, or may be for the profile for an existing customer to be amended. The customer profile data can be entered into the electronic system of the providers. This can be achieved by simple electronic reading, keyboard entry, or any other means for turning data into electronic format.

The retailer system may comprise a single electronic point of sale (EPOS) 18, with a stand-alone configuration. This is the commonest configuration for a small provider who would otherwise be precluded from loyalty schemes. Equally, several EPOS 18 can be connected to a central server 20 which performs a regulatory and storage function. This is the commonest configuration for large or very large providers, where the server 20 can be representative of whole linked networks of servers 20 and mainframes doing everything including accounts, credit card checking, stock inventory, stock ordering, building environment control, and, indeed, anything that can be done using electronic processors. It is this latter category of configuration on which loyalty card schemes are most often to be found, the percentage overhead of running such a scheme being relatively small compared to

-8-

the other functions. This is certainly not true for the small provided.

- The provider 16, possibly having entered the data into
- 5 their system 18, 20, can send the data (customer profile) to a service centre 22, where the data is stored in a service centre database 24. The provision of the customer profile data to the service centre 22 can be electronic (e.g., by internet or recorded disc), by telephone, or, in
- 10 the most basic way, by simply mailing the completed form 14 to the service centre 22 for keyboard entry or Optical Character Recognition (OCR) scanning at the service centre 22.
- 15 As will be made clear from the following description, a vital element of the customer profile data is the customers mobile telephone number. Without this, the present invention cannot be employed.
- 20 The service centre 22 checks if the data received is for an existing customer of the particular provider who supplied the data. If it is not, and the customer is new to that provider, the service centre 22 makes a record of the customer profile and creates a unique identifier for
- 25 the new customer. The provider will recognise each customer by the customer's unique identifier. If the customer is not a new customer, the service centre 22 simply amends any records that require to be changed to bring the particular customer profile up to date.
- 30 The service centre 22 also synchronises (makes the same) the information, held for each provider in the service centre database 22D and the information held in that provider's 16 database 18D, enabling the individual

-9-

- provider 16 to examine his records at his location. This is particularly useful where the provider has simply mailed the forms to the service centre. The provider can have an electronic record without himself making the data entry. For preference, customer profile record synchronisation is done electronically (phone file transfer, disc or internet), but any other method would be acceptable.
10. The service centre 22 supports a plurality of providers, each having their respective own set of records on the service centre database 22D and each receiving a copy of their records for personal use.
15. When a new customer is found, the service centre 22 puts together a package of data which that customer will require if the customer is to be identified by the provider 16. This package is sent, via the cellular telephone system 24, in an automated call, to the 20 customer's (modified) cellular telephone 26, which has additional features over those in a standard cellular telephone. The additional features allow for operation according to the present invention. If a dialled, modified cellular telephone 26 cannot be reached, the service 25 centre 22 repeatedly and periodically tries again until it succeeds.
- During a successful automated call, the cellular telephone 26 receives and records the data package from the service 30 centre 22. The automated call proceeds without the customer having to intervene. The modified cellular telephone 26 is thus automatically updated with information the customer can use to establish his identity with a provider 16.

-10-

For preference, the data package is stored in the SIM card memory, the SIM card being a feature of nearly all cellular telephones. Alternatively, the data package can 5 be stored in dedicated memory, provided within the modified cellular telephone 26 for that purpose, or stored sharing memory which is also available for other purposes.

The data package, stored in the modified cellular 10 telephone 26, can be one of many different stored data packages. The modified cellular telephone 26 can store an electronic "loyalty card" or "identity card" for each of a plurality of providers. The data package are stored so that the data package for each provider 16 can be 15 separately recalled.

Attention is now drawn to figure 2, showing an EPOS compatible with the present invention.

20 The EPOS comprises a display 28, a keyboard 30, a cash drawer 32, and a main body 34 which houses a computer which runs the EPOS and also provides communications via cabling 36 which provides communications with outside services such as its local server 20 or the telephone system. A swipe card reader 38 connects to the computer (58, shown hereafter) in the main body 34 and is used, among other things, for reading the magnetic stripes on credit and debit cards, and for reading the magnetic stripes on customer loyalty cards. In some EPOS systems, 25 the loyalty card reader can be separate from the credit/debit card reader. In this example, they are common. A printer (not shown) prints out receipts, cheques and credit card signature forms. All these elements are 30 known in the prior art.

-11-

The present invention provides a short range radio receiver 40, for preference of the "Bluetooth" (TM) variety, the up and coming standard for short range data communication, whose purpose is to receive the "electronic loyalty card" or "identity card" from the modified cellular telephone 26. The modified cellular telephone 26 can also be adapted to drive an infrared signal for reception of the "electronic loyalty card", detectable by an infrared receiver 42. This has the advantage of exploiting a trend in mobile phone equipment, where infrared transmission is often already incorporated and is becoming increasingly so. The hardware of the phone, thus, need not be modified, only its operating software. Such infrared transmitting The preferred embodiment has been shown with these two examples. However, within the invention there can be provided other short range communications devices, using sonic, subsonic or ultrasonic signals, magnetic induction, capacitive coupling or visible light.

Attention is drawn to Figure 3, showing the modified cellular telephone 26. In common with prior art cellular telephones, there is provided a display 40, telephone antenna 46, keyboard 48, speaker 50, microphone 52 and ringer transducer 54. The preferred embodiment of the present invention provides, in addition, a short range transmitting transducer 56 whose purpose is to send the "electronic loyalty card" or "identity card" to the EPOS. In the preferred example shown, the transmitting transducer is a small radio antenna, preferably for "Bluetooth" (TM) use, but equally usable with other standards. The antenna 56 might, equally, be housed within the body of the modified cellular telephone 26. In other

-12-

embodiments, the transmitting transducer 56 can be a visible or an infrared emitter (LED), an ultrasonic transducer, a magnetic loop or coil, or an acoustic transducer. Some, or all of these different transducers 5 can be housed within the modified cellular telephone 26. In another set of embodiments, the already existing features, found on a standard cellular telephone, can be used. Acoustic signals can be put out through the speaker 50 or through the ringer transducer 54. Light signals can 10 be put out by modulating the backlighting of the display 44 or by switching any light emitting diodes that the cellular telephone might possess. Although it is preferred that the modified cellular telephone 26 should be able to transmit to the EPOS 18 from several feet away, it is also 15 within the present invention for the EPOS 18 to possess a cradle for holding a modified cellular telephone 26 to receive data from shorter distances.

A cellular telephone, in general terms, comprises a 20 processor (small computer) which runs the other elements (receiver, transmitter, dialling routine, display, etc). The individual phone is identified by a SIM card, a small processor with non-volatile but recordable memory, which stores details of the phone and the user. The processor 25 co-operates with the SIM card. The SIM card can be ported between individual mobile phones to preserve the identity (the new phone is operationally indistinguishable from the old phone). The modified cellular telephone 26 has all of these elements, plus a transducer. The changes in the 30 behaviour between a regular cellular telephone and the modified cellular telephone 26 are achieved by simple additions to the program (firmware) that runs the processor in the modified cellular telephone 26.

-13-

Figure 4 is a schematic diagram of the manner in which the modified cellular telephone 26 sends its "electronic loyalty card" or "identity card" data to the EPOS 18.

5 The swipe card reader 38, already known in the art, is coupled to an EPOS computer 58 (already roughly described) which works in co-operation with the EPOS database 18D. The swipe card reader 38, among other things, reads a data stream from the magnetic stripes on customer loyalty cards. 10 The EPOS computer 58 already knows, therefore, how to identify and cope with the data stream from magnetic stripe customer loyalty cards.

15 The infrared receiver 42, together with any supporting hardware, firmware or software processing 42P, is also coupled to the EPOS computer 58. Likewise, the radio receiver 40, together with any supporting hardware and software 40P, is also coupled to the EPOS computer 58. This example shows two types of receiver 40 42 coupled to 20 the EPOS computer 58. The invention also provides that one, some, or all of the different types of transducers, mentioned above, can be coupled to the EPOS computer 58 at any one time.

25 In the preferred embodiment, short range radio transmission is used. When the modified cellular telephone 26 sends the data package, appropriate to the provider 16 whose EPOS 18 is shown, the short range radio receiver 40 receives the data package and sends it to the EPOS 30 computer 58.

In the event that the EPOS 18 40 does not have a radio receiver 40 or infra red receiver 42, and that it does not have a swipe card reader 38, or the user 16 has not, at

-14-

that moment, in his possession, a swipe card or a suitable mobile phone 26, it is envisaged, within the invention, that the EPOS 18, or associated telephone or other equipment, can be given the number or the equipment which, 5 ordinarily, would carry the loyalty card details. This information is sent to the service centre 22 which matches the telephone number against the user's 16 identity (see item 70 in Figure 5). The user 16 has his or her records updated.

10 Because, under this regime, the service centre 22 must hold a record of the user's 16 mobile telephone number and has access to the users 16 records 18D, it is envisaged, within the invention, that a user 16 can send a message, 15 such as a short message service message, to the service centre 22, can be identified thereby, or from their card data stored on and downloaded from the mobile phone 26, and receive a report on their points currently in the loyalty scheme. Secondly, the service centre 22, without 20 user 16 prompting, can send, from time to time, a loyalty scheme report to the user 16, either as a voice recording or a short message service message. Lastly, the service centre 22 can, from time to time, knowing the user's 16 provider, send promotional or other material to a user 16, 25 again as a recorded voice mail or a short message service message.

The modified cellular telephone 26 transmits the data package as a serial bit stream. The modified cellular 30 telephone 26 has, stored for that provider 16, a data package which, when serially transmitted, is identical to the data stream which would be read from the magnetic stripe on an equivalent customer loyalty card supplied by that provider. The modified cellular telephone 26

-15-

transmits at the serial data at a rate which is within the range of acceptable rates for reading the serial data from the magnetic stripe on a magnetic card in the stripe reader 38. The signal, from the modified cellular telephone 26, is thus indistinguishable from the signal from a conventional magnetic stripe card, read in the swipe reader 38. The EPOS computer is already able to handle data from the magnetic swipe reader. The serial data stream from the radio receiver 40 is thus simply presented to the computer 58 as if it were coming from the swipe reader 38. The old and the new systems therefore operate, totally compatibly. The new elements in the EPOS 18, essential to the operation of the present invention, are simple add-ons which substitute one signal source for another. The computer 58 software, already in the EPOS 18, remains intact and unaltered.

As an alternative, shown for the supporting hardware and software 40P, but equally applicable for any other type of transducer type, the provider 16 can choose to have separate software to implement the present invention, allowing direct interaction with the provider database 18D.

Another alternative embodiment, also within the invention, is to have the modified cellular telephone 26 transmit at a different rate, the data stream being stored in the supporting hardware and software 40P, which provides the data stream to the EPOS computer 58 at an acceptable rate.

30

Attention is drawn to Figure 5, encapsulating in a flow diagram, the various operations which are the essence of the customer registration process.

-16-

Details of a new registration 60 or an amendment 62 are assembled by the provider 16 as customer details 64, sent as phone data files or voice 14, via the internet 10, or 5 as forms 12, to the input registration process 66 at the service centre 22. If a first test 68 detects that a customer is a new customer, a first operation 70 creates a new customer record and generates a unique customer identifier, stored in the service centre database 22D. A 10 second operation 72 phones the modified cellular telephone 26 and transfers the data package which will form the "electronic loyalty card" or electronic "identity card" to be presented to the provider 16.

15 If the first test 68 recognised an existing customer for that provider 16, a third operation 74 simply stores any amendments.

Attention is drawn to Figure 6, showing a flowchart of how 20 the modified cellular telephone 26 sends its "electronic card".

A fourth operation 76 has the modified cellular telephone simply "waiting for something to happen", in this case 25 waiting for some input from the keyboard 48, or from voice recognition, if available. A second test 78 looks to see if the menu function of the modified cellular telephone has been selected. If it has not, the fourth operation 76 just carries on. If it has, a third test sees if the 30 customer, by moving through the "menu options" on the modified cellular telephone, has opted for card data (the data package) to selected. This becomes just a normal menu option. The "send card" flag can be selected to come up on the display 44. A provider 16 is selected by scrolling

-17-

through a list of providers 16, selected on the menu options. When the selected provider is found, the "go" or "OK" button will be pressed, from among the keys on the keyboard 48. A fifth operation 82 then has the selected 5 data package retrieved from the SIM memory and sent as a serial data stream via the transmitting transducer 58. In the event that the third test 80 did not find that the menu request required sending card data, a sixth operation 84 attends to the other menu request and then goes back to 10 the fourth operation 76.

Finally, Figure 7 is a flowchart of the manner in which the modified cellular telephone 26 receives its "electronic card" data from the service centre 22.

15 In a seventh operation 86 the modified cellular telephone 26 waits, in the normal way, for a call. If a fourth test 88 does not detect a call, the modified cellular telephone 22 keeps on waiting. If the fourth test 88 detects that a 20 call has been received, a fifth test 90 checks to see the nature of the call. If it is a normal call, an eighth operation 92 attends to the call in the normal manner. When a sixth test 94 detects that the normal call is over, a ninth operation 96 terminates the call and the modified 25 cellular telephone 26 returns to waiting in the seventh operation 86.

The automated call, from the service centre 22, contains 30 an identifying element to indicate, to the modified cellular telephone 26, that an "electronic card" data package is about to be sent for storage in the SIM memory. For preference, the identifying element is a coded digital header which the modified cellular telephone 26 can identify. Any other type of identifier is also acceptable

-18-

in the present invention, such as tone signalling, timed pulses and the like.

When the fifth test 90 detects the digital header, it
5 knows that an "electronic card" data package is about to
be received. Control is passed to a tenth operation 98
which has several things to do.

Preferably, the first action that the tenth operation 98
10 performs is to inhibit the modified cellular telephone
from ringing. This means that the "electronic card" data
package can be received without intervention by, or
disturbance of, the customer.

15 Preferably, the second action that the tenth operation 98
performs is to cause the display 44 to show an appropriate
message such as "Upgrading data, please wait" or
"Temporarily Busy", or display an apt icon, or some such
thing. This means that the customer will not attempt to
20 use the modified cellular telephone 26 for the few seconds
it takes the service centre 22 to send the "electronic
card" data package. As a further precaution, the tenth
operation 98 can lock the keyboard 48 for the duration of
the receipt of the data package from the service centre
25 22.

The third action of the tenth operation 98 performs is to
take the data package into temporary storage prior to
transfer to the SIM memory. This is so that the
30 "Electronic card" can be identified for appropriate
storage in the SIM memory. The present invention permits
the use of error detection and correction measures, such
as parity checks, cyclic redundancy checks, and the like,
to ensure that the data package is correctly received. For

-19-

preference, the service centre 22 repeatedly sends the data package until the modified cellular telephone 26 terminates the call. The tenth operation 98 does not terminate the call until it has received an error free 5 version of the data package. Terminating the call thus acts as a confirmation of correct receipt.

Alternatively, the modified cellular telephone 26 can send 10 back what it received for comparison with what was sent from the service centre 22. If they match, the service centre sends a "go ahead" flag and shuts down the call.

Alternatively, the service centre can send a plurality of 15 copies of the data package, the tenth operation 98 selecting the most commonly received version, on the basis that errors are rare and seldom happen in the same part of a data stream more than once.

20 These, and any other means of ensuring correct receipt of the data package, are all within the present invention.

The fourth action that the tenth operation 98 performs is to compare the just-received "electronic card" with other 25 "electronic cards" already stored in the SIM memory. The data package contains identifiable bit patterns that identify the provider 16. Alternatively, the unique identifier data string (equivalent to a plastic card number) can be examined.

30 If a pre-existing entry is found, the tenth operation 98 stores the new data package in the location in the SIM memory where the pre-existing entry resided, the pre-existing entry being discarded. If a pre-existing entry is

-20-

not found, the tenth operation stores the data package in a new location in the SIM memory and sets up a menu item, pointing to the storage location for the new data package, with a name extracted from the data package, so that the 5 new data package can be displayed and selected by the customer.

When a seventh test 100 finds that the receipt of the data package and the associated actions of the tenth operation 10, are complete, it passes control to an eleventh operation 102 which terminates the call and passes the modified cellular telephone 26 back into the waiting state of the seventh operation 86.

15 Another feature of the present invention is the ability of a provider to "retrieve" a card from an unwanted or unwelcome customer by simply having the service centre 22 cancel or corrupt the data package and send it to the customers modified cellular telephone 26. This is of 20 particular use where the "electronic card" is used to gain access to facilities. An individual who is fired can be denied access in moments. The provider 16 can "change the locks" and give all acceptable individuals a new "key" swiftly and without knowledge of the key holders.

25 Another feature of the present invention is that it permits a provider to keep track of a customer even though his profile data is out of date. While people can often move house, the probability of their simultaneously changing their mobile telephone is very slight. 30 Individuals also tend always to carry their mobile phones.

Another feature of the present invention is the "lost card" replacement ability. Say a card (or its electronic

-21-

equivalent) has been lost. The customer simply has to place a phone call to the service centre 22 and request its replacement. The service centre 22, within moments, can send the replacement "card" to the customer's modified 5 mobile telephone 26, ensuring a rapid delivery to the correct recipient.

10

15

20

25

30

-22-

CLAIMS:

1. A system comprising: a transceiver, operative to receive a long range data message directed exclusively to that particular transceiver, operative to store the data message, operative thereafter to retrieve the stored data message and operative to transmit the retrieved data message, over a short range; and a receiving unit, operative to receive the data message from said transceiver, operative to analyse the data message to determine its contents, and operative to grant access to a facility if said contents are acceptable.
- 15 2. A system, according to claim 1, wherein said transceiver comprises a cellular telephone having a short range transmitter.
3. A system, according to claim 1, wherein said transceiver comprises a pager having a short range transmitter.
4. A system, according to claim 2 or claim 3, wherein said short range transmitter comprises an infrared transmitter.
- 25 5. A system, according to claim 2 or claim 3, wherein said short range transmitter comprises a visible light transmitter.
- 30 6. A system, according to claim 2 or claim 3, wherein said short range transmitter comprises an ultrasonic transmitter.
7. A system, according to claim 2 or claim 3, wherein said short range transmitter comprises a sonic transmitter.

-23-

8. A system, according to claim 2 or claim 3, wherein said short range transmitter comprises a subsonic transmitter.

5 9. A system, according to claim 2 or claim 3, wherein said short range transmitter comprises means to transmit employing magnetic induction.

10. A system, according to claim 2 or claim 3, wherein 10 said short range transmitter comprises means to transmit employing capacitive coupling.

11. A system, according to claim 2 or claim 3, wherein 15 said short range transmitter comprises means to transmit employing one or more low power radio signals.

12. A system, according to claim 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 or 11, comprising a service centre, operative to send the long range message to said transceiver.

20

13. A system, according to claim 12 wherein said service centre is operative to receive indication of the transceiver, to identify the user thereby, and to grant access to the facility in response there to.

25

14. A system, according to claim 13, wherein said service centre is operative to receive identification of the identity of the transceiver from a point of sale terminal.

30 15. A system, according to claim 13, wherein said service centre is operative to receive indication of the identity of the transceiver by telephone.

16. A system, according to claim 13, 14 or 15 wherein said

-24-

service centre is operative to send other information to said transciever.

17. A system, according to claim 1, 2, 3, 4, 5, 6, 7, 8, 5 9, 10, 11, 12, 13, 14, 15 or 16, wherein the message is a swipe card message, and wherein said short range transmission comprises serial data at a rate compatible with reading a swipe card in a swipe card reader.

10 18. A system, according to claim 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 14, 15, 16, 17 or 18, wherein said facility is a facility capable of being accessed using a swipe card.

19. A system, according to claims 1, 2, 3, 4, 5, 6, 7, 8, 15 9, 10, 11, 12, 13, 14, 15, 16, 17 or 18, wherein said transciever is operative automatically to receive said long range data message.

20. A system, according to claims 1, 2, 3, 4, 5, 6, 7, 8, 20 9, 10, 11, 12, 13, 14, 15, 16, 17, 18 or 19, comprising means for a user to change said long range data message for the contents of said short range data message to be unacceptable to said receiver to deny access to said facility.

25

21. A system, according to claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 or 20 comprising means for a user to re-send said long range data message for the contents of said short range data message to be acceptable to said receiver to grant access to said facility.

22. A system, according to claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20 or 21 wherein

-25-

said facility comprises access to at least part of a building.

23. A system, according to claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20 or 21 wherein said access to said facility comprises access to a vehicle.

24. A system, according to claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20 or 21 wherein access to said facility comprises access to a computer installation.

25. A system, according to claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20 or 21 wherein access to said facility comprises access to the services of a customer loyalty scheme.

26. A system, according to claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24 or 25 wherein said stored message is one of a plurality of different stored messages, and wherein said transceiver comprises means to select which one of said plurality of stored messages is to be sent as said short range data message.

25

27. A system, according to claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25 or 26 wherein said long range data message comprises means for correcting errors.

30

28. A system, according to claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26 or 27 wherein said means for correcting errors comprises included error correcting codes.

-26-

29. A system, according to claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26 or 27 wherein said means for correcting errors comprises means to transmit the long range message back to its origin for the origin to cease repeated transmission of said long range message when the return copy matches the sent copy.

10 30. A system, according to claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26 or 27 wherein said means for correcting errors comprises means to compare multiple transmissions of said long range message and to select the most commonly occurring 15 version thereof.

31. A method for permitting access to a facility, said 20 method including the steps of: sending a long range data message exclusively to a selected transceiver; storing the data message in said transceiver; thereafter retrieving the data message and transmitting the data message, over a short range, from said transceiver; receiving the data message 25 from said transceiver; recovering the contents of said data message, received from said transceiver; and granting access to said facility if said contents are acceptable.

30 32. A method, according to claim 31, wherein said step of receiving said long range message and said step of transmitting said short range message include employing a cellular telephone having a short range transmitter.

-27-

33. A method, according to claim 31, wherein said step of receiving said long range message and said step of transmitting said short range message include employing a 5 pager having a short range transmitter.

34. A method, according to claim 32 or claim 33, including the step of employing, as said short range transmitter, an infrared transmitter.

10

35. A method, according to claim 32 or claim 33, including the step of employing, as said short range transmitter, a visible light transmitter.

15 36. A method, according to claim 32 or claim 33, including the step of employing, as said short range transmitter, an ultrasonic transmitter.

37. A method, according to claim 32 or claim 33, including the step of employing, as said short range transmitter, a sonic transmitter.

20 38. A method, according to claim 32 or claim 33, including the step of employing, as said short range transmitter, a subsonic transmitter.

25 39. A method, according to claim 32 or claim 33, including the step of employing, to transmit said short range message, magnetic induction.

30

40. A method, according to claim 32 or claim 33, including the step of employing, to transmit said short range message, capacitive coupling.

-28-

41. A method, according to claim 32 or claim 33, including the step of employing, to transmit said short range message, one or more low power radio signals.

5 42. A method, according to claim 31, 32, 33, 34, 35, 36, 37, 38, 39, 40 or 41, including the step of sending the long range message to, said transceiver, from a service centre.

10 43. A method according to claim 42, including the service centre identifying the user by means of identification of the transceiver and there by granting access to said facility.

15 44. A method, according to claim 42, wherein the service centre receives indication of the identity of said transceiver from a point of sale terminal.

20 45. A method, according to claim 43, wherein said service centre receives indication of the identity of said transceiver from a telephone.

46. A method, according to claim 43, 44 or 45 including said server employing said identity of said transceiver to direct other material to said transceiver.

25

47. A method, according to claim 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45 or 46 including the steps of: employing, as the message, a swipe card message; and sending said short range transmission as a serial data 30 message having a rate compatible with reading a swipe card in a swipe card reader.

48. A method, according to claim 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46 or 47 for use where

-29-

said facility is a facility capable of being accessed using a swipe card.

49. A method, according to claim 31, 32, 33, 34, 35, 36,
5 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47 or 48 including
the step of said transceiver automatically receiving said
long range data message.

50. A method, according to claim 31, 32, 33, 34, 35, 36,
10 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48 or 49
including the step of changing said long range data message
for the contents of said short range data message to be
unacceptable to said receiver to deny access to said
facility.

15

51. A method, according to claim 31, 32, 33, 34, 35, 36,
37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49 or 50
including the step of re-sending said long range data
message for the contents of said short range data message to
20 be acceptable to said receiver to grant access to said
facility.

52. A method, according to claim 31, 32, 33, 34, 35, 36,
37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50 or 51
25 for use where access to said facility comprises access to at
least part of a building.

53. A method, according to claim 31, 32, 33, 34, 35, 36,
37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50 or 51
30 for use where access to said facility comprises access to a
vehicle.

54. A method, according to claim 30, 31, 32, 33, 34,
35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49,

-30-

50 or 51 for use where access to said facility comprises
access to a computer installation.

55. A method, according to claim 31, 32, 33, 34, 35,
36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50
or 51 for use where access to said facility comprises access
to the services of a customer loyalty scheme.

56. A method, according to claim 31, 32, 33, 34, 35,
36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50,
51, 52, 53, 54 or 55 including the steps of having said
stored message as one of a plurality of different stored
messages, and selecting which one of said plurality of
stored messages is to be sent as said short range data
message.

57. A method, according to claim 31, 32, 33, 34, 35,
36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50,
51, 52, 53, 54, 55 or 56 including the step of providing
error correction in said long range data message.

58. A method, according to claim 57, wherein said error
correction comprises included error correcting codes in said
long range data message.

25

59. A method, according to claim 57, wherein said error
correction comprises transmitting the long range message
back to its origin for the origin to cease repeated
transmission of said long range message when the return copy
30 matches the sent copy.

60. A method, according to claim 57, wherein said error
correction comprises comparing multiple transmissions of
said long range message and selecting the most commonly

-31-

occurring version thereof.

61. A transceiver, operative to receive a long range data message directed exclusively to that particular
5 transceiver, operative to store the data message, operative thereafter to retrieve the stored data message and operative to transmit the retrieved data message, over a short range, to a receiving unit, said receiving unit being operative to receive the data message from said transceiver, operative to 10 analyse the data message to determine its contents, and operative to grant access to a facility if said contents are acceptable.

62. A receiving unit, operative to receive a data message 15 from a transceiver, operative to analyse the data message to determine its contents, and operative to grant access to a facility if said contents are acceptable, where said transceiver is operative to receive a long range data message directed exclusively to that particular transceiver, is 20 operative to store the data message, and is operative thereafter to retrieve the stored data message and operative to transmit the retrieved data message, over a short range, to a receiving unit.

25 63. A system, substantially as described with reference to the appended drawings.

64. A method, substantially as described with reference to the appended drawings.

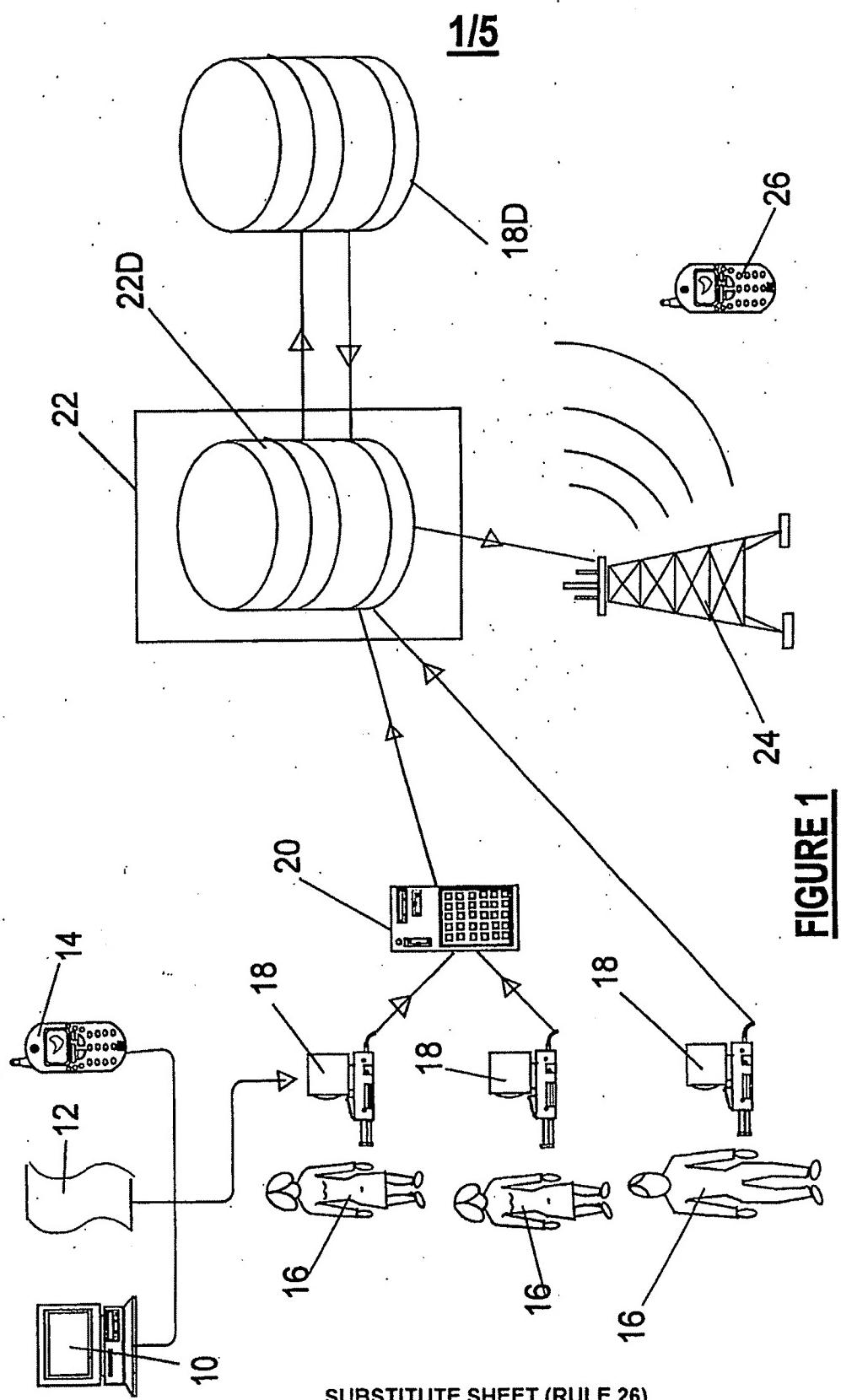
30

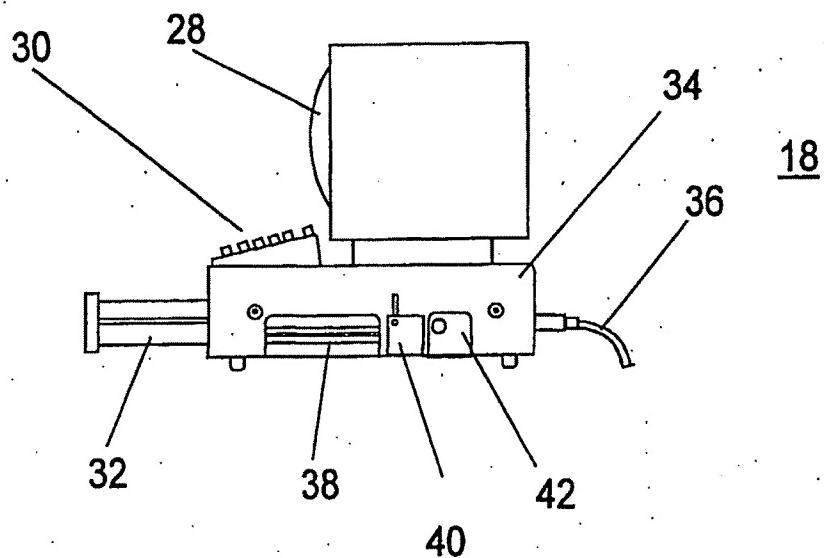
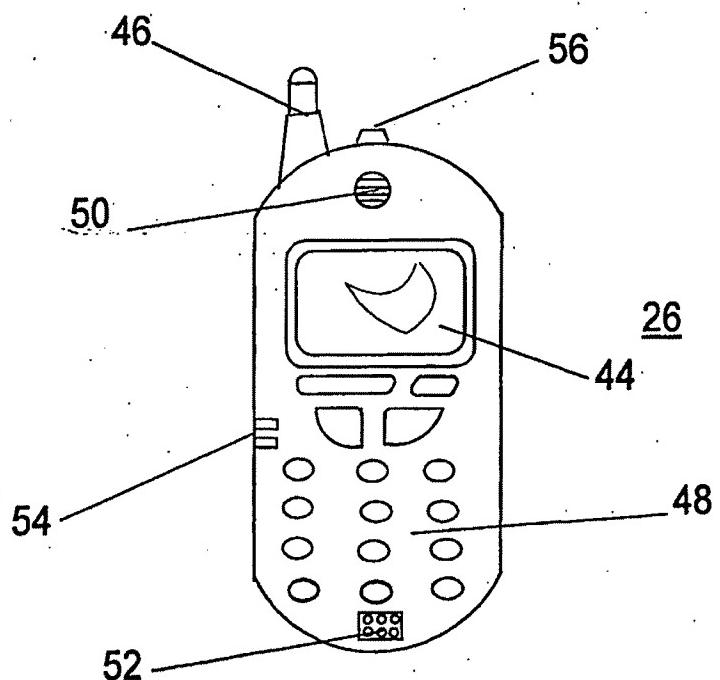
65. A receiving unit, substantially as described with reference to the appended drawings.

66. A transceiver unit, substantially as described with

-32-

reference to the appended drawings.



2/5**FIGURE 2****FIGURE 3**

3/5

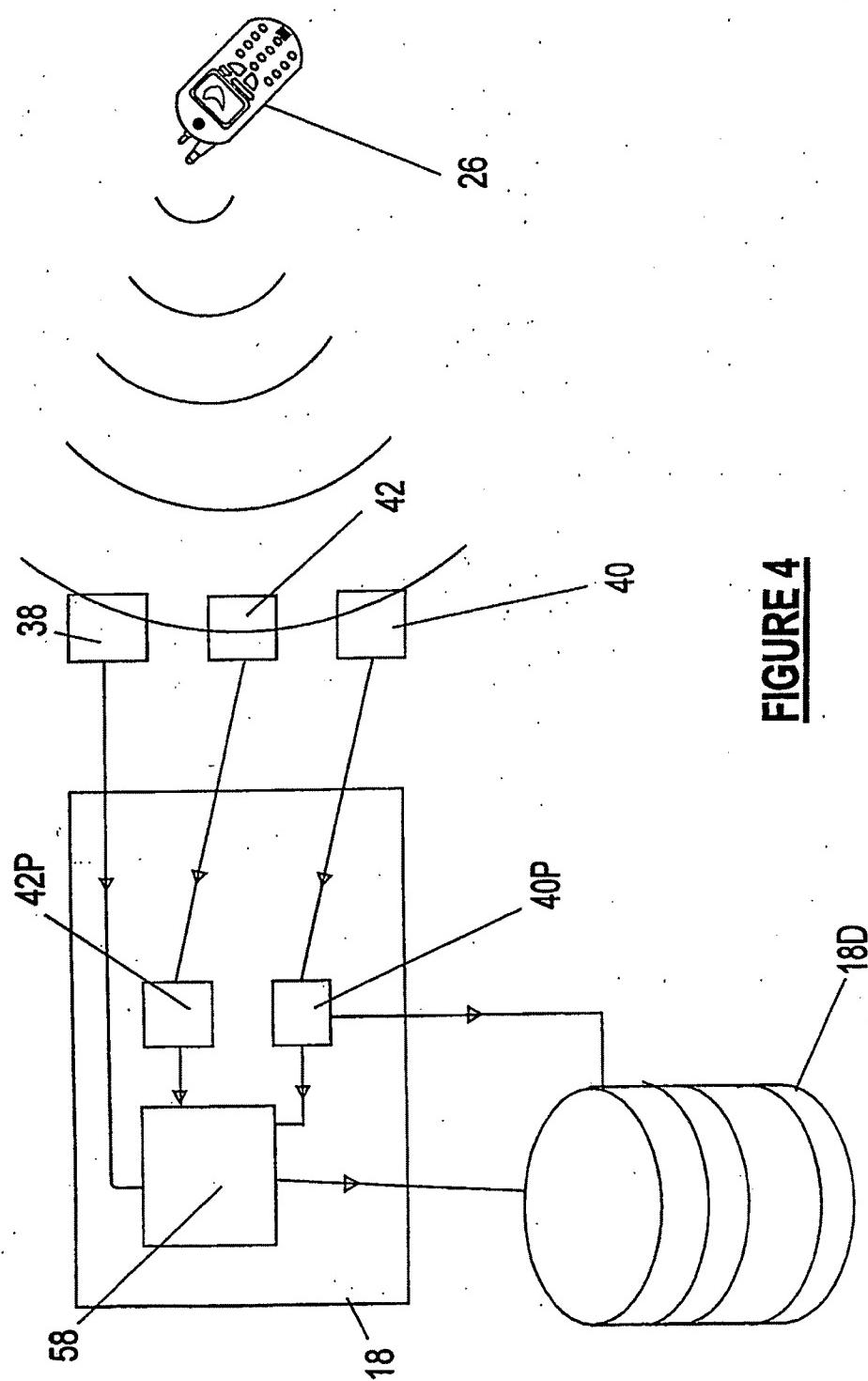
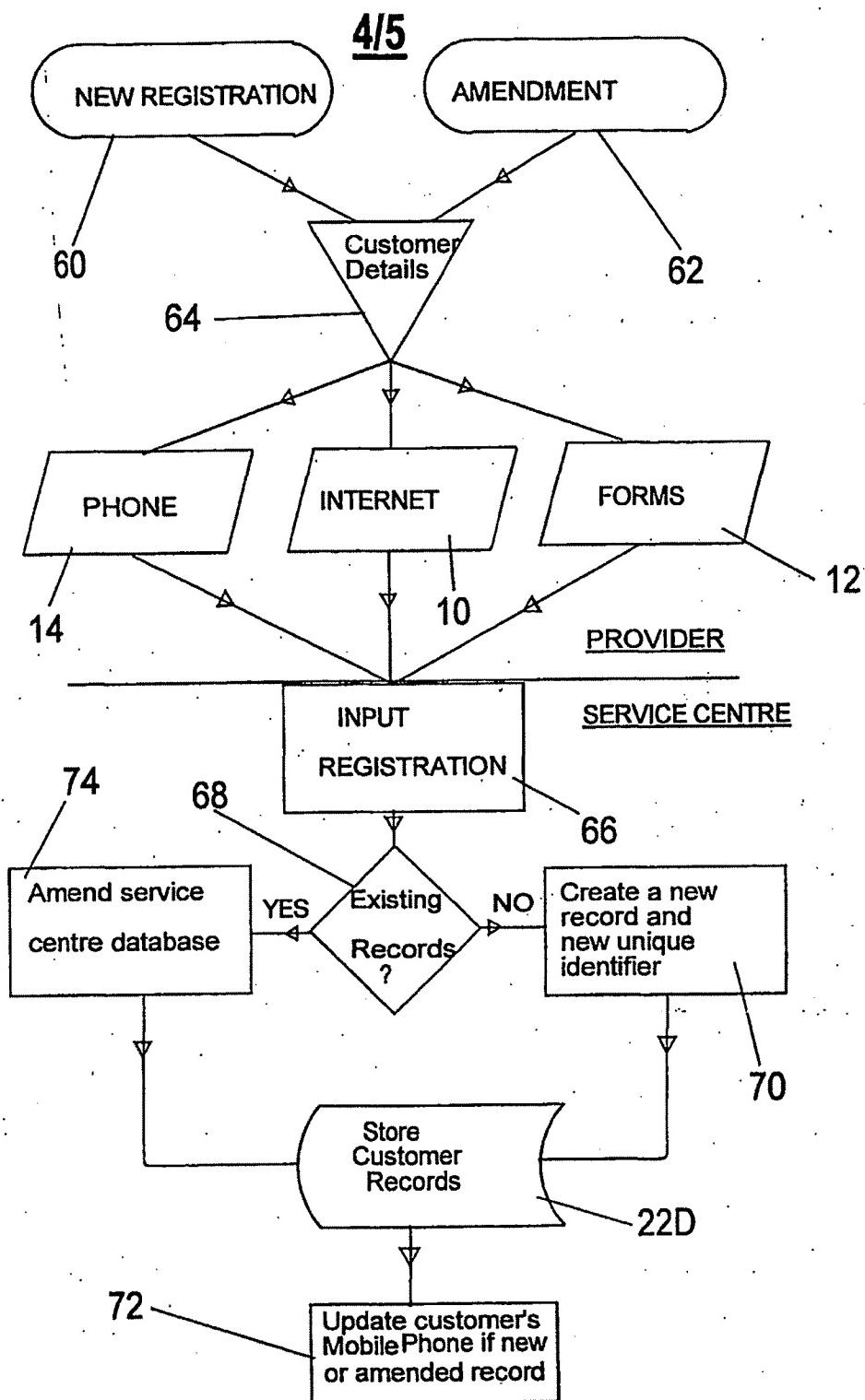
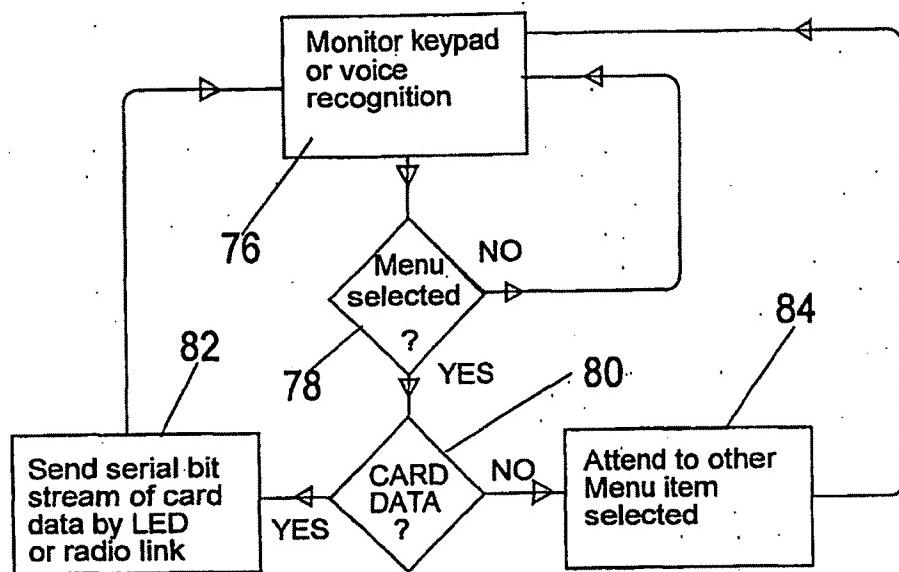
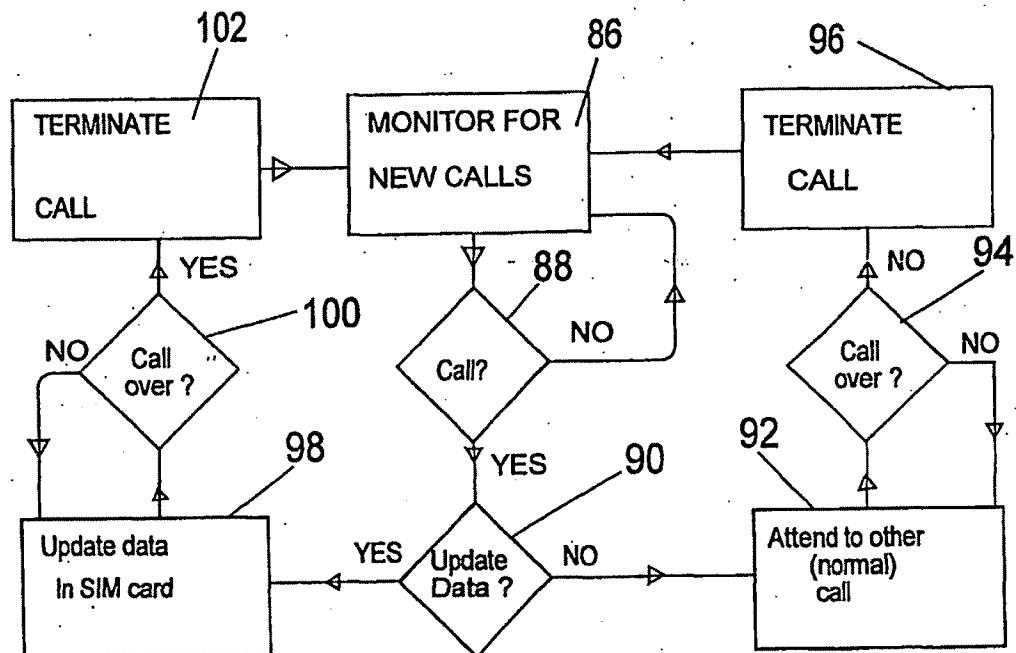


FIGURE 4

**FIGURE 5**

5/5**FIGURE 6****FIGURE 7**